REMARKS

The following remarks are in response to the Examiner's Office Action mailed on May 13, 2004. Claims 5-11 and 21-35 have been canceled. Claims 1, 2 and 12-15 has been amended. Claims 1-4 and12-20 are now pending. For the Examiner's convenience and reference, Applicants' remarks are presented in the order in which the corresponding issues were raised in the Office Action.

I. Sequence Listing Requirement under 37 C.F.R. §§1.821-1.825

The Examiner remind Applicants that sequences appearing Figure 7 must be identified by a sequence identifier (SEQ ID NO:) in accordance with 37 C.F.R. §1.821(d). Applicants amend Figure 7 to add a sequence identifier to each of the polypeptide sequence appearing therein.

Pursuant to 37 C.F.R. §1.821(c), Applicants submit herewith a paper copy of a Sequence Listing with the addition of SEQ ID NOs: 55-60 to the originally filed Sequence Listing in order to place the disclosure in compliance with the requirements of 37 C.F.R. §§1.821-1.825. Pursuant to 37 C.F.R. § 1.821(e), Applicants also submit herewith a diskette containing copy of the amended Sequence Listing in computer readable form.

Pursuant to 37 C.F.R. § 1.821(f), Applicants state that the content of the paper and computer readable copies of the Sequence Listing submitted herewith are the same as that which appears in the application.

II. Rejection under 35 U.S.C. §112, Second Paragraph

Claims 1-26 stand rejected under 35 U.S.C. §112, second paragraph as being indefinite. Applicants amend claim 1 to specify an isolated antibody that specifically binds to human CCR5. The antibody comprises a heavy chain variable region of SEQ ID NO: 55 and a light chain variable region of SEQ ID NO: 58, a heavy chain variable region of SEQ ID NO: 56 and a light chain variable region of SEQ ID NO: 59, or a heavy chain variable region of SEQ ID NO: 57 and a light chain variable region of SEQ ID NO: 60. Independent claim 18 specifies a recombinant cell expressing a polypeptide selected from the group consisting of SEQ ID NOs: 36-41.

Applicants submit that the pending claims are sufficiently definite to one of ordinary skill in the art under 35 U.S.C. §112, second paragraph. Withdrawal of this ground of rejection is therefore respectfully requested.

III. Rejection under 35 U.S.C. §112, First Paragraph

Claims 1-26 stand rejected under 35 U.S.C. §112, first paragraph as allegedly containing subject matter which was not enabled by the specification.

35 U.S.C. §112, first paragraph reads:

> The specification shall contain a written description of the invention and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best way contemplated by the inventor of carrying out his invention.

Additionally, the courts have interpreted the enablement requirement to require that the specification teach those in the art to make and use the invention without "undue experimentation". As set out in *In re Wands*, 858 F.2d 731, 737; 8 USPQ2d 1400, 1404 (Fed. Cir. 1988), factors to be considered in determining whether required experimentation is undue include:

1. The breadth of the claims;
2. The nature of the invention;
3. The state of the prior art;
4. The level of a person of ordinary skill;
5. The level of predictability in the art;
6. The amount of direction provided by the inventor;
7. The existence of working examples in the specification; and
8. The quantity of experimentation needed to make or use the invention based on the content of the disclosure.

The courts have pointed out that "[n]ot every last detail [of an invention need] be described [in a patent specification], else patent specifications would turn into production specifications, which they were never intended to be." *In re Gay,* 135 USPQ 311,316 (C.C.P.A. 1962). Citing the opinion in *Gay*, the Board of Patent Appeals and Interferences echoed this point in its statement that " the law does not require a specification to be a blueprint to satisfy the requirement for enablement under 35 U.S.C. 112, first paragraph," *Staehelin v. Secher*, 24

USPQ2d 1513, 1516 (Bd. Pat. App. & Int. 1992). Even more broadly, the MPEP states the specification need not disclose what is well known to those skilled in the art and preferably omits that which is well known to those skilled and already available to the public. See MPEP section 2164.05(a).

The United States Patent and Trademark Office recognizing the above legal authority has promulgated *Training Materials For Examining Patent Applications With Respect To 35 U.S.C. 112, First Paragraph-Enablement Chemical/Biotechnical Applications*.. As stated in these training materials at section III, paragraph 6, with bolding added: "It is improper to conclude that a disclosure is not enabling based on an analysis of only one of the above [*Wands*] factors while ignoring one or more of the others., The examiner's analysis **must** consider all the evidence related to each of these factors, and any conclusion of non-enablement **must** be based on the evidence as a whole."

In the Specification, ample examples of antibodies with various sequences in V_H and V_L regions are provided. Applicants have shown that antibodies directed to loop 6 of hCCR5 were selected for the first time in the present invention and they can be used for inhibiting HIV infection, for example. It is well recognized in the field of antibody engineering that it is the CDR regions of an antibody that determine the specificity of an antibody. Thus, antibodies having CDR regions similar to those presented in Figure 7 should also bind to the same area of hCCR5. The Examiner has not met the burden of providing objective evidence showing why such antibodies would not bind to loop 6 of hCCR5.

However, in an effort to advance prosecution of this application and without acquiescing to the propriety of this rejection, Applicants amend claim 1 to specify an isolated antibody that specifically binds to human CCR5, and comprises a heavy chain variable region of SEQ ID NO: 55 and a light chain variable region of SEQ ID NO: 58, a heavy chain variable region of SEQ ID NO: 56 and a light chain variable region of SEQ ID NO: 59, or a heavy chain variable region of SEQ ID NO: 57 and a light chain variable region of SEQ ID NO: 60.

Applicants submit that the Specification not only enables a claim of an isolated antibody that binds to loop 6 of hCCR5 but also enables the claims as pending. Withdrawal of rejection 35 U.S.C. §112, first paragraph is therefore respectfully requested.

CONCLUSION

Applicants earnestly believe that the application is in condition for allowance and respectfully solicit the Examiner to expedite prosecution of this patent application to issuance. Should the Examiner have any questions, the Examiner is encouraged to telephone the undersigned.

The Commissioner is authorized to charge any additional fees which may be required, including petition fees, or credit any overpayment to Deposit Account No. 23-2415 (Docket No. 25636-718).

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Respectfully submitted,

Date: July 30, 2004

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FIGURE 7

Amino acid sequence alignment of variants of selected scFv antibodies against loop 6 of human CCR5

V_H region:

[Seq ID NO: 55] added

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                                               CDR1                          CDR2                                                                CDR3
15.150.11  QVQLQESGPGLVKPSETLSLTCTVSGGSI--GHDYWSWIRQPPGEGLEWIGFIFFDGSTNYNPSLNGRVTISLDTSKNQLSLRLTSVTAADTAVYFCARLKGAWLLSEPPYFSSDGMDVWGQGTTVTVSS
15.150.12  QVQLQQWGAGLLKSWGTLSLTCAVSGASF--SGYYWSWIRQPPGKGLEWIGEINHRGSTTYNPSLDGRVTISLDTSTNQISLKLTSMTAADTAVYYCART-----------VAGTSDYWGQGTLVTVSS
15.150.24  QVTLKESGPTLVKPTQTLTLTCTFSGFSLRTTGEGVGWVRQPPGKALEWLALIYWDDDKRYSPSLKSRLTITKDTSKKQVVLTMTNVDPADTATYYCTHEQYYYDTSGQPYY----FDFWGQGTLVTVSS
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V_L region:

[seq. ID NO: 58] added

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                                           CDR1                            CDR2                                             CDR3
15.150.11  NFMLTQPPS-ASGTPGQRVSISCSGSSS-DIGSNTVNWYQQLPGTAPKLLIYSNNQRPSGVPDRFSGFKSGTSASLVISGLQSEDEADYYCAAWDESLNGVVFGGGTKVTVL
15.150.12  ETTLTQSPAFMSATPGDKVSISCKASR--DVDDD-VNWYQQRPGEAPIFIIEDATTLVPGISPRFSGSGYGTDFTLTINNIDSEDAAYYFCLQHDNF--PLTFGGGTKVEIK
15.150.24  NIQVTQSPSSLSASVGDRVTMTCRASQ--DI-RKNLNWYQQKPGKAPKVLIYDASDLETGIPSRFSGSGSGTDFILTISSLQPEDIATYYCQQSD-YL-PLTFGGGTKVDIK
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